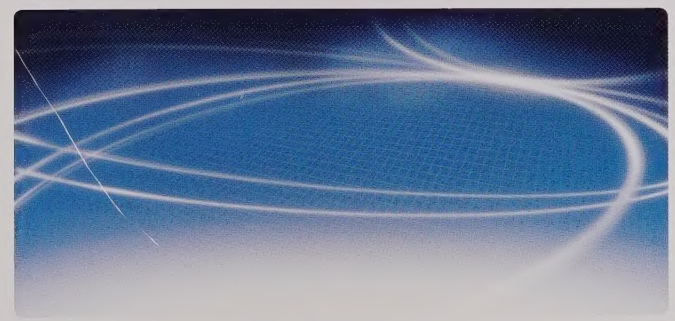
Agilent Network Analyzer



J6800A Network Analyzer

Hardware Setup Guide

Agilent Technologies

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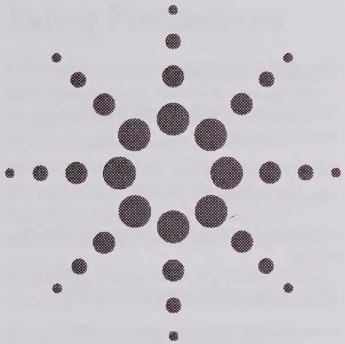

Agilent J6800A Network Analyzer

Hardware Setup Guide

Agilent Technologies

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WARNING For protection from electric shock hazard, power cord ground must not be defeated.

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The following general safety precautions must be observed during all phases of operation, service, and repair of this instrument. Failure to comply with these precautions with specific warnings in this manual violate safety standards of design, manufacture, and intended use of this instrument.

Grounding

To minimize shock hazard, the instrument chassis and cabinet must be connected to an electrical ground. The instrument is equipped with a three-conductor AC power cable compatible with an approved three-contact electrical outlet. The power jack and mating plug of the power cord must meet International Electrotechnical Commission (IEC) safety standards.

Environment

Do not operate the instrument in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.

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Dangerous voltages exist within this instrument. Service and adjustment of this instrument is to be performed only by trained service personnel.

Do not replace components with the power cable connected.[1] Dangerous voltages may be present even when the power cable is disconnected.

[1] Note this exception: You can exchange Line Interface Modules with the power cable connected and power applied.

Do not perform internal servicing or adjustment unless another person, capable of rendering first aid and resuscitation is present.

Hazardous Material

Should the LCD be damaged, the liquid crystal material can leak. Avoid all contact with this material, especially swallowing. Use soap and water to thoroughly wash all skin and clothing contaminated with the liquid crystal material.

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Electric Shock Hazard

Do not remove the system covers. To avoid electric shock, use only the supplied power cords and connect only to properly grounded (3-pin) wall outlets.

Explosion Hazard

Do not operate in the presence of flammable gases.

Fire Hazard

For continued protection against fire hazard replace only with fuse of same type and rating.

Cleaning

To clean the product, use a damp cloth moistened with a mild solution of soap and water. *Do not* use harsh chemicals. *Do not* let water get into the product.

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Do not use this product when the product shows visible damage, fails to perform, has been stored in unfavorable conditions, or has been subject to severe transport stresses.

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Instruction book symbol - the product will be marked with this symbol when it is necessary for the user to refer to the instruction book in order to protect against damage.

A product marked with this symbol indicates it is a laser product. When necessary, this symbol will be included in the instruction book for the user to refer to in order to protect against personal injury and/or correct product handling.

Indicates potential for electrical shock.

This is an Installation Category II product.

This is a Pollution Degree 2 product.

This product is designed for indoor use only.

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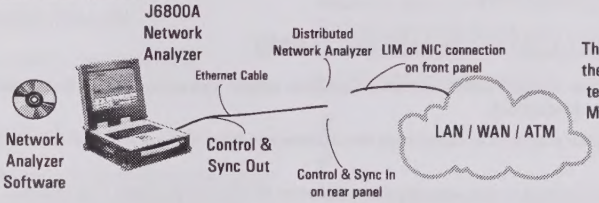
Documentation Map

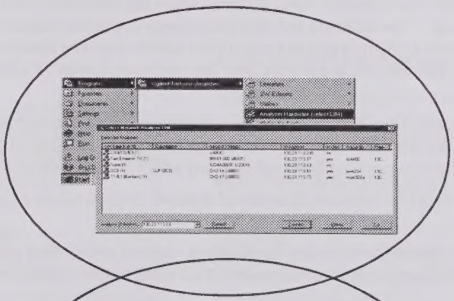
The books and Help shown here are available to assist you in setting up and using the Network Analyzer products.

Install and Connect



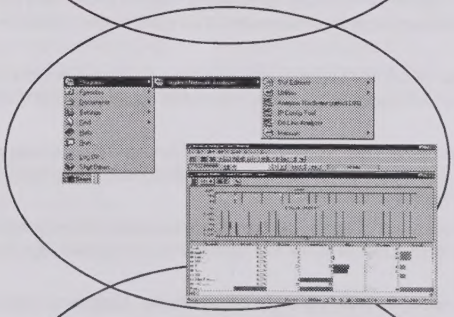
The Network Analyzer Software runs on the Network Analyzer for LAN / WAN / ATM network testing. Data capture is done using the Line Interface Modules installed in the Analyzer.

Configure



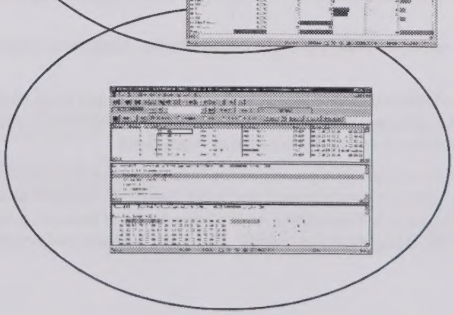
Select and configure a Line Interface Module for capturing network data.

Run

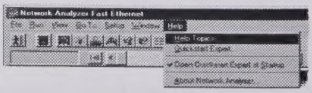


Start the Network Analyzer application. Configure and run measurements.

Analyze Data



Use online Help to get details.



Analyze captured data.

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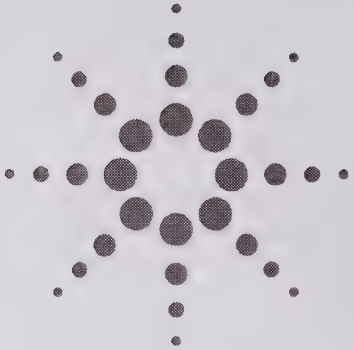

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The Network Analyzer Solution

The Agilent Network Analyzer product family contains new ultra-high-performance acquisition hardware platforms. This product family includes these hardware and software items for testing in a variety of scenarios:

- J6800A Network Analyzer – this manual is dedicated to this product
- J6801A Distributed Network Analyzer
- J6802A Distributed Network Analyzer MX
- J6805A Distributed Network Analyzer ME
- J6835A Network Analyzer Software Edition Agent
- J6840A Network Analyzer Software
- J6781A Network Troubleshooting Center

Combined with intelligent, patented analysis software, the Network Analyzer family of products can resolve the new and complex problems that occur in:

- State-of-the-art communication networks that carry heavy application loads
- IP telephony
- Streaming media traffic

The Network Analyzer family of products enables centralized network troubleshooting using multiple Network Analyzers and SNMP/RMON agents from a single location.

The Network Analyzer family of products also provides an expert network test and troubleshooting system that supports real-time measurements in LAN, WAN, and ATM network environments.

All of the products in the Network Analyzer family provide a consistent graphical user interface and utilize the same underlying technology, providing an unmatched level of user friendliness and integration.

The Network Analyzer family of products tests all network infrastructures (LAN, WAN, and ATM), including the latest technologies such as SAN, IP Telephony and 3G mobile networks.

The Network Analyzer family of products is capable of fulfilling all network test and analysis needs of state-of-the-art networks. Today, these networks carry a variety of sophisticated data applications, including voice and streaming media. For this reason, the Network Analyzer is the tool of choice for network engineers and troubleshooters.

The J6800A Network Analyzer

The J6800A Network Analyzer can be used as a protocol analysis and SNMP/RMON2 data collection tool in the Network Analyzer product family. You can use the Network Analyzer as a dispatched troubleshooting tool for analyzing LAN, WAN, and ATM protocols.

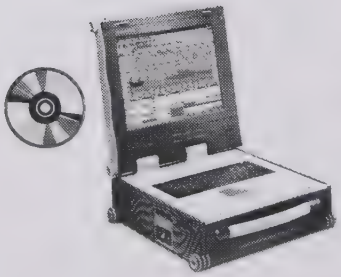
The J6800A can also be used in a centralized troubleshooting solution when the Network Troubleshooting Center accesses the Network Analyzer through a remote desktop application. Using this remote session, NTC can configure, start, and stop the Network Analyzer application.

The Network Analyzer use models are:

1 **Dispatched Realtime** – You can take the Network Analyzer to a remote location and use it to monitor or analyze a network. This is the primary intended use model of the J6800A Network Analyzer. If required, you can configure the Network Analyzer to support the other use models, described below.

2 **Dispatched Remote** – You can take the Network Analyzer to a site, access it from a remotely located laptop or PC by using a telemetry connection (probably dial-up), configure it for measurements, disconnect from it while the Network Analyzer runs independently, and reconnect later to examine the results or download data.

3 **Remote Control Distributed** – This use model is similar to the second one except that you maintain a constant control of the Network Analyzer while it is being used, probably through a LAN connection.



Network Analyzer Features

The Network Analyzer has the following features:

- A built-in PC for full control of the Network Analyzer and to access other Network Analyzers remotely

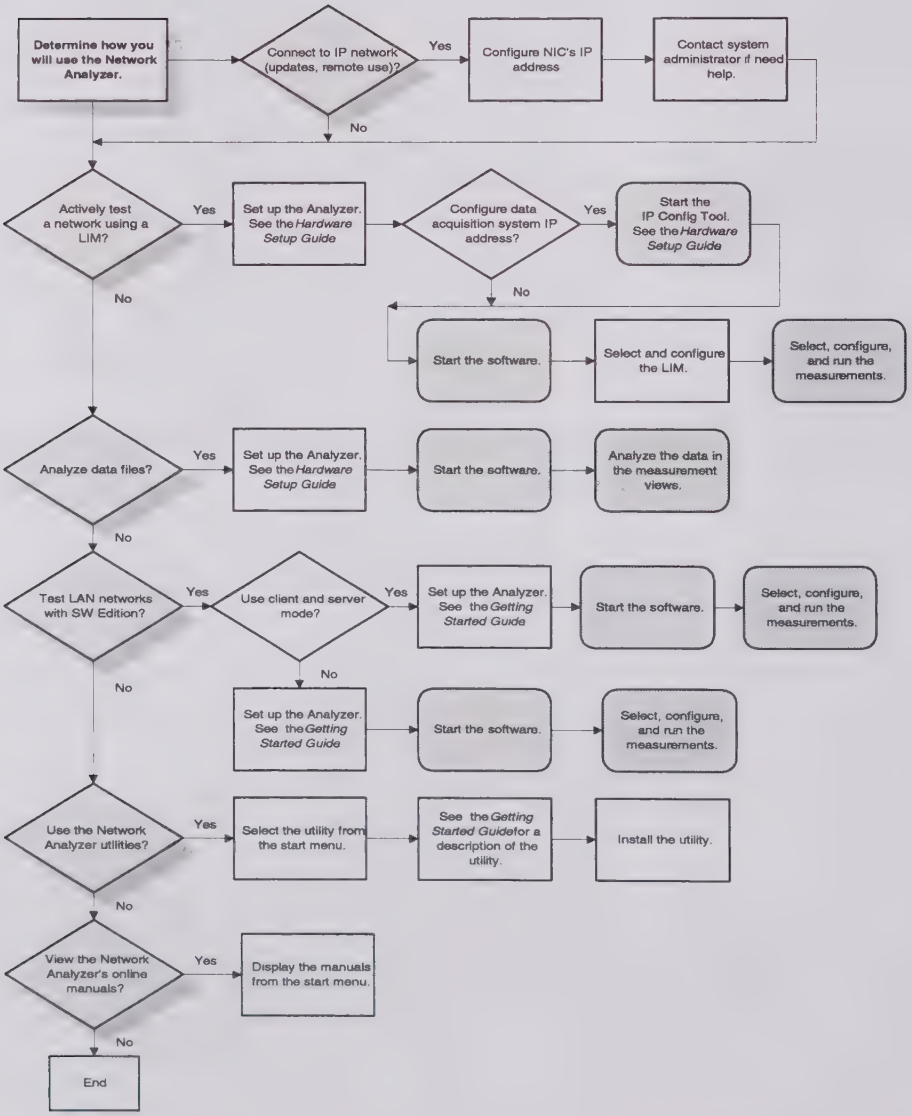
- Two data acquisition systems; each data acquisition system contains a slot for a supported Line Interface Module (LIM) used to physically connect to the network under test. Each data acquisition system can capture network data through a supported LIM for the technology type you are using.
- LEDs that provide status and data acquisition indications for each data acquisition system
- Built-in power supply with AC power connection
- GPS interface hardware and connectors
- Support for the hot-swapping of LIMs
- 256 MB capture buffer for each data acquisition system
- Full-rate data capture from supported LIMs to a maximum of 1 Gbps
- Cell-based (ATM) and frame-based data processing
- 32 real-time hardware capture filters
- Display and search filters in both data acquisition systems
- Control & Sync port

The Network Analyzer's Built-in PC

The Network Analyzer's built-in PC contains:

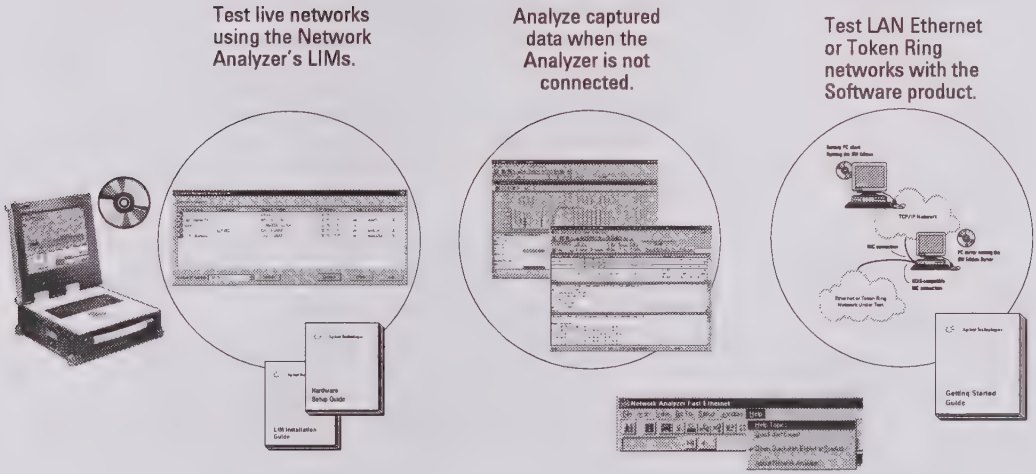
- Microsoft Windows XP®
- 700 MHz processor
- 256 MB of expandable memory
- 30 GB or larger hard disk drive
- Ultra VGA video display, 14.1 inches
- Full keyboard with integrated touchpad pointing device
- CD-RW drive
- Standard connectors: external video display, external PS-2 mouse, USB (two), headphones, microphone
- Two double-height Network Interface Card (NIC) slots

Deciding How To Use the Network Analyzer


Determine how you will use the Network Analyzer.
Connect to IP network (updates, remote use)?
Yes
Configure NIC's IP address
Contact system administrator if need help.
No
Actively test a network using a LIM?
Yes
Set up the Analyzer. See the Hardware Setup Guide
Configure data acquisition system IP address?
Yes
Start the IP Config Tool. See the Hardware Setup Guide
No
No
Start the software.
Select and configure the LIM.
Select, configure, and run the measurements.
Analyze data files?
Yes
Set up the Analyzer. See the Hardware Setup Guide
Start the software.
Analyze the data in the measurement views.
No
Test LAN networks with SW Edition?
Yes
Use client and server mode?
Yes
Set up the Analyzer. See the Getting Started Guide
Start the software.
Select, configure, and run the measurements.
No
No
Set up the Analyzer. See the Getting Started Guide
Start the software.
Select, configure, and run the measurements.
Use the Network Analyzer utilities?
Yes
Select the utility from the start menu.
See the Getting Started Guide for a description of the utility.
Install the utility.
No
View the Network Analyzer's online manuals?
Yes
Display the manuals from the start menu.
No
End

How to Use the Network Analyzer

The Network Analyzer software for LAN, WAN, and ATM protocol analysis is installed at the factory. The Network Analyzer software controls the Network Analyzer data acquisition systems. These main capabilities are included:


Test live networks using the Network Analyzer's LIMs.
Analyze captured data when the Analyzer is not connected.
Test LAN Ethernet or Token Ring networks with the Software product.
Hardware Setup Guide
LIM Installation Guide
Getting Started Guide

Using the Network Analyzer to Control Other Network Analyzers

You can use the J6800A Network Analyzer to provide control of a J6801A Distributed Network Analyzer, J6802A Distributed Network Analyzer MX, or J6805A Distributed Analyzer ME. Connection to the Distributed Network Analyzer is provided by the Control & Synch Out port of the J6800A.

Refer to Chapter 2 of this manual and the appropriate Distributed Network Analyzer Getting Started Guide for more information.

Overview of Network Troubleshooting Center (NTC)

This section describes the Network Troubleshooting Center, which along with the Network Analyzer Software and SNMP/RMON2 applications, contributes to the Network Analyzer Solutions.

The Agilent Network Analyzer Software that supports the J6800A Network Analyzer and other Network Analyzer hardware is designed to interact with these other applications.

NTC provides a centralized troubleshooting solution that enables the use of multiple Network Analyzers and SNMP/RMON agents from a single location. The NTC software consists of two components: the NTC Console and the NTC Server.

You can install both components on the same PC. Alternatively, you can install the NTC Console on one or more machines, and the NTC Server on another machine.

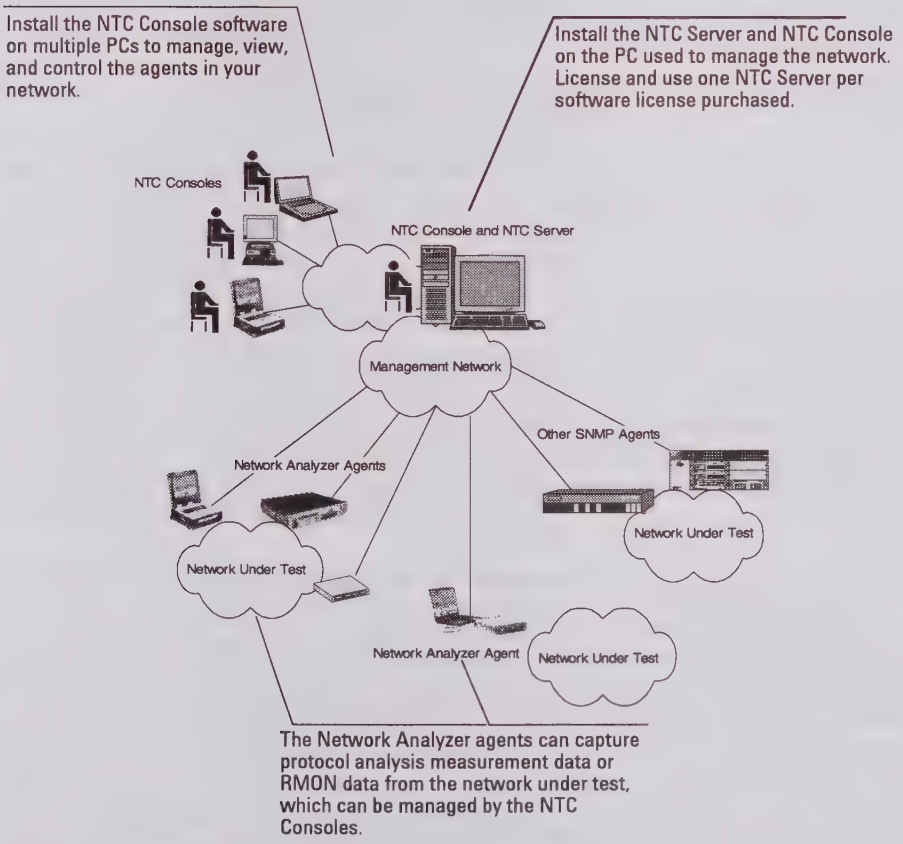
With NTC software, you can perform these tasks:

- Add or discover new agents on your network.
- Configure and enable measurements on interfaces or agents.
- Collect data from agents.
- View results of collected data from agents.
- Open a remote session window to the Network Analyzer Software application running on an agent for troubleshooting purposes.
- Update software for platforms, agents, and interfaces.

NTC can be used to access the Network Analyzer through a remote session window. Using this remote session, NTC can configure, start, and stop the Network Analyzer application.

The network deployment diagram on the next page provides a pictorial representation of how these hardware and software components interact.

This diagram shows a sample deployment of a single NTC Server and NTC Console, multiple PCs running the NTC Console, J6800A Network Analyzers, and various Distributed Network Analyzers.


Install the NTC Console software on multiple PCs to manage, view, and control the agents in your network.
Install the NTC Server and NTC Console on the PC used to manage the network. License and use one NTC Server per software license purchased.
NTC Consoles
NTC Console and NTC Server
Management Network
Other SNMP Agents
Network Analyzer Agents
Network Under Test
Network Under Test
Network Analyzer Agent
Network Under Test
The Network Analyzer agents can capture protocol analysis measurement data or RMON data from the network under test, which can be managed by the NTC Consoles.

Refer to the *Network Troubleshooting Center Getting Started Guide* for more details about this software application.

Installing the Network Troubleshooting Center

This section provides a brief overview of NTC's installation process. Full installation instructions appropriate for specific hardware can be found in the *Network Troubleshooting Center/Network Analyzer Software Setup Guide*.

As you prepare to install NTC (and during the installation), consider these logistical items:

- For performance reasons, do not install the NTC Server on a computer that is heavily used for another purpose, such as a Web server, a file server, or a domain name server.
- Agilent recommends that you install Agilent NTC on NTFS for better security, system failure recovery, and performance. You can install Agilent NTC on FAT or FAT32 as well. (NTFS, FAT, and FAT32 are operating system file formats. See your Windows documentation for more information.)
- If you have been using a previous version of NTC, you may want to keep the data you have collected before installing the latest version. To save the data, copy the current database to a safe location. Please note that if the new version of NTC contains database schema changes, your saved database may not work.
- Stop all processes and exit all programs, including anti-virus software, prior to installing NTC.
- Note the IP address and/or the host name of the computer on which you will install the NTC Server. You will use this IP address (or host name) when you log in to NTC to begin monitoring and troubleshooting. If you intend to install NTC on a "multi-homed host" (that is, a computer with multiple network interface cards and, therefore, multiple IP addresses), be aware that the NTC Server will be associated with only one of these IP addresses. You can control which IP address with which the Server will be associated. See NTC's online Help for NTC Server Manager for more information.

NTC Minimum Installation and Operation Requirements

These minimum requirements sup[port up to 25 historical data collections and one real-time data collection.

Operating Systems: Windows NT 4.0, SP 5 or 6 with Internet Explorer 5.0 or higher, Windows 2000 Pro, Windows XP Pro

Minimum Installation Disk Space: 240 Mbytes (Console and Server), 110 Mbytes (Console only)

Minimum CPU Speed: 500 Mhz

Minimum PC Memory: 256 Mbytes

Display: 1024 x 768

Installing the NTC Console or Server, and Interface Licensing

You can install the NTC Console and Server on a single computer, and you can install the NTC Console (without the Server) on several computers. NTC is licensed for data collection on some limited number of physical interfaces. This licensing limit affects the number of agents from which you can collect data.

Single CD Installation Process

NTC is installed from a single CD that includes Network Analyzer software and other utilities. Please refer to the table on page 19 of this manual and the *Network Troubleshooting Center/Network Analyzer Software Setup Guide* to to make decisions about what to install and on which devices to install it.

Integrating with Network Management Stations

NTC can interact with third-party NMSs such as HP OpenView. There are separate installation procedures to address this need. Please see the *Network Troubleshooting Center Getting Started Guide* for more information.

Starting the NTC Server

After the NTC Server installation, you will be prompted whether you want to start the NTC Server automatically. Agilent recommends that you select the automatic option during installation. If you do not intend to immediately add agents, start data collection, or start a remote session, you can start the NTC Server later using the Manage NTC Server option in the Start menu.

Uninstalling NTC and Saving the NTC Database

Before uninstalling the NTC Server, save the NTC database. You can save the NTC database using the Manage NTC Server option in the Start menu. If the new version of NTC contains database schema changes, your saved database may not work.

See "Uninstalling the NTC Software or Network Analyzer Software' in the *Network Troubleshooting Center/Network Analyzer Software Setup Guide* for more information about uninstalling NTC software.

NOTE It is a good practice to back up your NTC database on a regular basis.

If you are installing NTC on a J6800A Network Analyzer, follow these steps to install the NTC/NA software components on the Analyzer.

NTC/NA Software Components to Install When Using a J6800A Network Analyzer		See the NTC/NA Installation Instructions in this chapter	See Also
Install and Connect Hardware	**1** Unpack the shipment and check the contents. Then set up the hardware. The NTC/NA software will be pre-installed.		✔ *This Hardware Setup Guide*
Install the NTC/NA Software Components	**2** Prepare to install the NTC/NA software from the CD or web update. Note: You may need to upgrade your J6800A operating system to Windows XP if you want to use NTC at a remote location and drill into this J6800A Network Analyzer from that location. See the following sub-steps to help you decide what actions to take during the installation.	✔ See "Installing the NTC/NA Software" in the *NTC/NA Software Setup Guide*.	
	3 Are you going to use NTC on this Network Analyzer? If not, skip to step 4 to update the NA Software. Otherwise, follow these steps:		
	3a. If you are using a previously purchased J6800A Network Analyzer, ensure that it has the Windows XP operating system. Contact Agilent Product Support for more information.		

NTC/NA Software Components to Install When Using a J6800A Network Analyzer			See the NTC/NA Installation Instructions in this chapter	See Also
		3b. Install the Complete software package, which contains these NTC/NA software components: • NTC Server • NTC Console • Network Analyzer Software • Agent Configuration Tool • Documentation You can install the NTC Console on as many PCs as you want; you do not need to license it. Selecting Complete installs the NTC Server and the NTC Console on the same PC. If you licensed the NTC Server on this J6800A, you cannot license it on any other PC. However, if you did not license it on this J6800A and instead need to install and run it on a different PC, you can license the NTC Server on a different PC. To do so, go to the next step.		*NTC/NA Software Setup Guide*
		3c. If you need to install and run the NTC Server on another PC or NA, and you have not already licensed it on the J6800A you are using to run the NTC Console, you can install and license the NTC Server on a different PC. You can install and license the NTC Server one time only for each software license that you purchased. When you install the NTC Server on a different PC, other users can connect to it.		
	4	Update the Network Analyzer Software on this Network Analyzer. Alternatively, you can install the Complete software package, which includes the updated Network Analyzer Software.		
Configure	**5**	If you are using this J6800A Network Analyzer to configure the IP addresses of other agents in the network, use the Agent Configuration Tool.		✔ *Hardware Setup Guide*
Use	**6**	Start the NTC Console and discover or add agents.		✔ *NTC Getting Started Guide*
	7	Drill down from NTC to the agents, if desired, and run the Network Analyzer Software application.		✔ *NA Getting Started Guide*

Notes About NTC When Using the J6800A

A J6800A that will use NTC to open a remote session window to a DNA must have these software components installed:

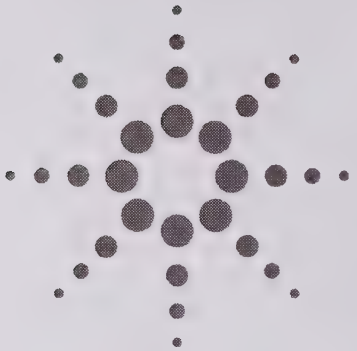
- NTC/NA – Includes client remote session functionality.
- NTC Agent Services – To configure the NA to be an RMON agent for SNMP/RMON2 data collection.
- Windows XP – If the J6800A Network Analyzer will be an agent in the network.
- You can install only one NTC Server per software license.
- Other users can connect to the NTC Server.
- The J6800A can run Windows 2000 if it will be running the Network Analyzer Software only.

Before Starting the Installation

You must remove any previously installed versions of the Network Analyzer Software (J6841A or J6840A) before starting the NTC/NA software installation.

NOTE You must stop the NTC Server when preparing to upgrade the NTC Server. Failure to stop the Server will cause installation errors and prevent the NTC from running properly. Select and use the Pre-Uninstall utility from the Start menu.

See Chapter 2 of this manual for details about making connections to and setting up the Network Analyzer to run measurements.



2
Setting Up the Network Analyzer

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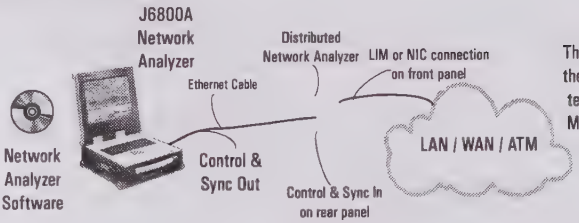
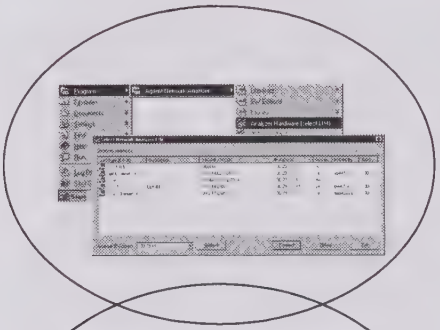
Install and Connect



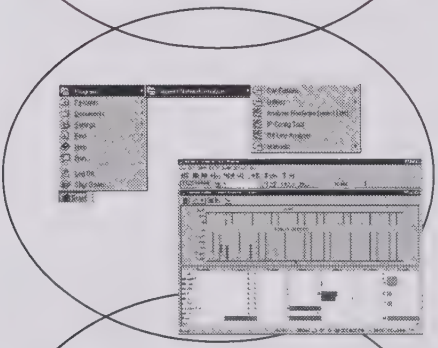
The Network Analyzer Software runs on the Network Analyzer for LAN / WAN / ATM network testing. Data capture is done using the Line Interface Modules installed in the Analyzer.

Configure



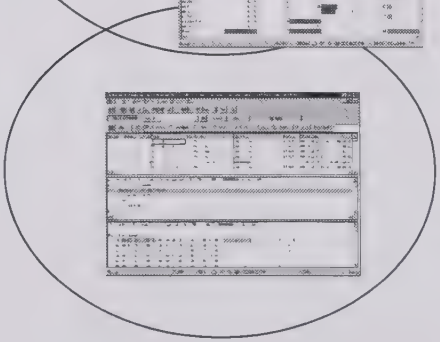
Select and configure a Line Interface Module for capturing network data.

Run

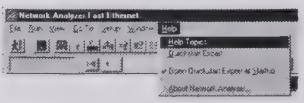


Start the Network Analyzer application. Configure and run measurements.

Analyze Data



Use online Help to get details.



Analyze captured data.

Setting Up and Running the Network Analyzer

Use the general steps listed below to set up the Network Analyzer and begin running measurements. These steps are described in more detail next.

Overview of Steps for Network Analyzer Setup and Use			Software Setup Guide	Setup Guide	Getting Started Guide	LIMs Guide	Online Help
Install and Connect	Prepare	Understand the connections to the Network Analyzer.		✔			
	1	Install the Line Interface Modules or Cooling Control Modules.		✔		✔	
	2	Connect LIMs to network under test.		✔		✔	
	3	Turn on the Network Analyzer.		✔			
	4	Install the software update (if nec).	✔		✔		
Configure	5	Configure IP addresses (if nec).		✔	✔		
	6	Start the software.		✔			
	7	Select the Line Interface Module(s).		✔	✔		
	8	Configure the LIM's physical interface.		✔	✔		
Run	9	Run measurements to begin testing. a. Select a measurement. b. Configure the measurement. c. Run the measurement.			✔		✔
Analyze Data		Analyze the captured data.			✔		✔

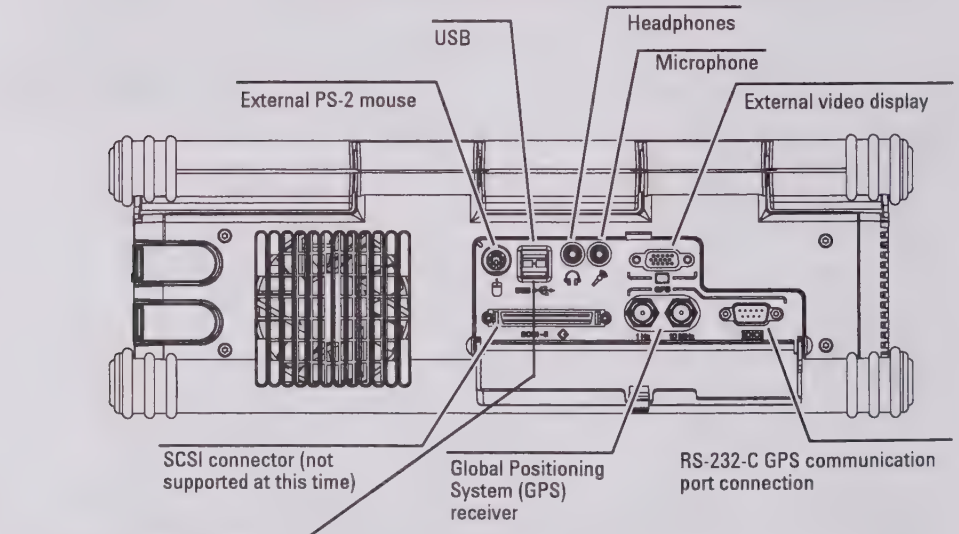
Prepare - Understand the Connections to the Network Analyzer

Depending on how you will be using the Network Analyzer, you will make one or more types of connections, as described in this section. You can connect the Network Analyzer to:

- Peripheral devices
- A network under test using dedicated LIMs
- Remote Distributed Network Analyzers
- Multiple Distributed Network Analyzers in a daisy chain
- A GPS Receiver

Connect to Peripherals

You can connect peripheral devices to the Network Analyzer. The rear panel of the J6800A Network Analyzer is shown here.


USB
Headphones
Microphone
External PS-2 mouse
External video display
SCSI connector (not supported at this time)
Global Positioning System (GPS) receiver
RS-232-C GPS communication port connection
The USB can be used to connect an optical mouse, floppy drive, or printer.
Details about connecting the Network Analyzer to a GPS receiver are described in on page 50 of this manual.

Connecting a Printer

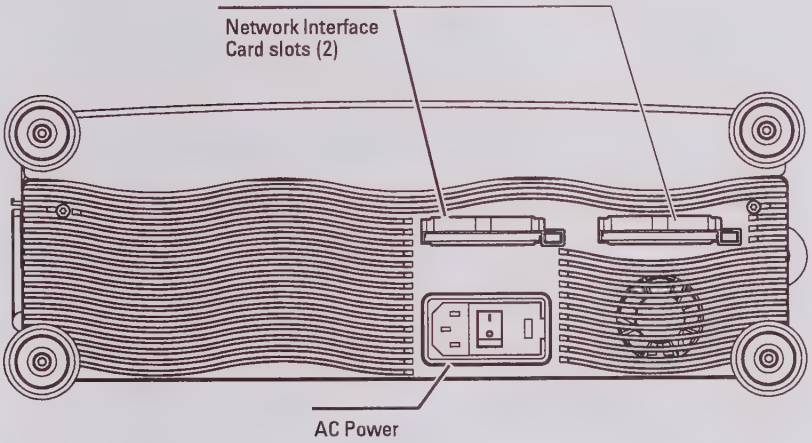
You can connect a USB printer to the USB connector on the rear panel of the Network Analyzer. You can print files, Help topics, and measurement results. The default printer selection is set to No Printer. If you are going to use a printer with your Network Analyzer, select the printer driver and output port.

NOTE Once a USB keyboard is detected and configured, the Network Analyzer operating system will not allow the internal keyboard or mouse to be used unless operating system parameters are reconfigured.

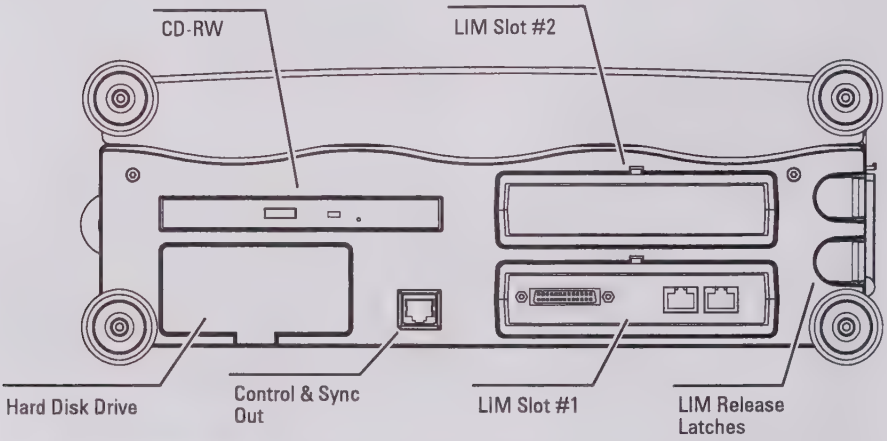
NOTE The SCSI II port is not part of the built-in PC in the Network Analyzer. Therefore, you cannot use the SCSI II port to connect to a printer.

The left side of the J6800A Network Analyzer is shown here.

The Network Analyzer contains two network interface card (NIC) slots for connecting to a network.



The right side of the J6800A Network Analyzer is shown here.



CAUTION Do not connect the Network Analyzer's Control & Sync Out port to the network under test; this connection is used to connect to other Network Analyzers.

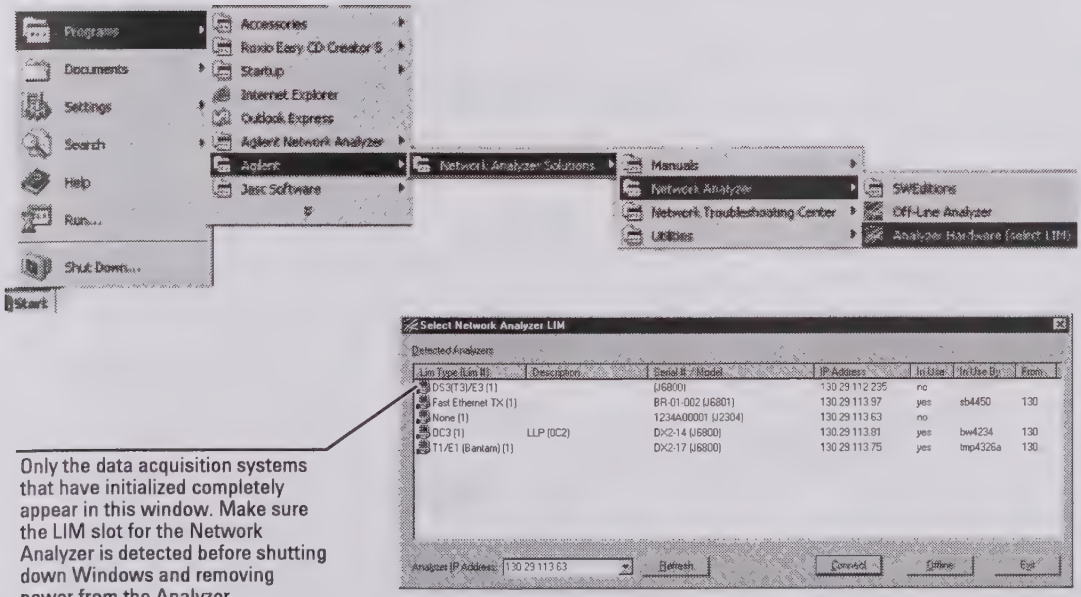
Do Not Remove Power When the Acquisition System is Rebooting

Do not remove power from the Network Analyzer while the data acquisition system is rebooting.

CAUTION

The data acquisition system reboots each time the Network Analyzer application is shut down (exited to Windows) and each time a LIM is installed. If you shut down the Network Analyzer application and remove power from the Analyzer before the data acquisition system has fully initialized, this action may put the Analyzer in a state where the data acquisition system will have to be reprogrammed.

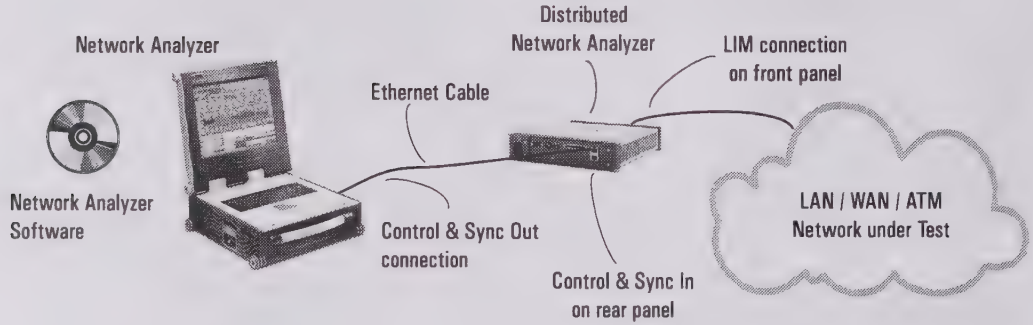
Network Analyzers have a built-in mechanism to recover from the state described in the Caution above. Agilent recommends that before closing Windows and removing power from the Analyzer, you use the Analyzer Hardware (select LIM) option to ensure that the acquisition slot is detected, as shown here:



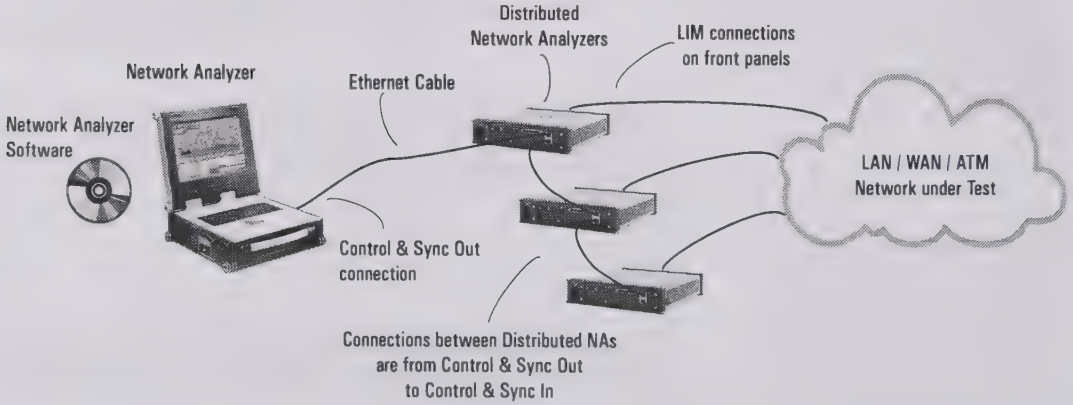
Only the data acquisition systems that have initialized completely appear in this window. Make sure the LIM slot for the Network Analyzer is detected before shutting down Windows and removing power from the Analyzer.

Connecting to Distributed Network Analyzers

The most straightforward means of controlling other Analyzers, such as Distributed Network Analyzers, is by connecting from the Control & Sync Out on one Analyzer to the Control & Sync In on the next Analyzer, as shown in the following picture.



A variation of this scenario occurs when you use the Network Analyzer as the controlling PC client when you daisy-chain two or more Distributed Network Analyzers together, as shown in the following picture.



For details about time-synchronizing the Distributed Network Analyzers, see the *Distributed Network Analyzer Hardware Setup Guide*.

About the Control & Sync RJ-45 Connections

The Control & Sync connection interface enables communication between the Analyzer and the PC client. The RJ-45 connector interface is compatible with standard UTP Ethernet systems. The pin assignments are:

Output Port RJ-45 pin	Signal	Input Port RJ-45 pin	Signal
1	RXD+	1	TXD+
2	RXD-	2	TXD-
3	TXD+	3	RXD+
4	CLK_OUT+	4	CLK_IN+
5	CLK_OUT-	5	CLK_IN-
6	TXD-	6	RXD-
7	EVT_OUT+	7	EVT_IN+
8	EVT_OUT-	8	EVT_IN-

Step 1. Install the Line Interface Modules (LIMs)

1. Locate the dual LIM slots on the right side of the Network Analyzer.
2. Locate the release latch for the LIM. If a LIM is installed, slide the latch to release the LIM.
3. Slide the LIM you are going to use completely into the slot. Press firmly to seat the LIM in the slot. The release latch will lock into place completely when the LIM is seated properly.

Make sure that both LIM slots in the Network Analyzer are filled with Line Interface Modules (LIMs) or Cooling Control Modules (CCMs) in one of these ways:

- LIMs only – Install two LIMs
- LIM and CCM – Install one LIM and one CCM
- CCMs only – Install two CCMs

During operation, both LIM slots must be occupied with either LIMs or CCMs to maintain the Network Analyzer's internal airflow during operation. Failure to fill both LIM slots can result in faulty operation due to inadequate cooling.

For details about the LIMs, see the *Line Interface Modules Installation Guide* hard copy or the online version, which is accessible from the Start menu when starting the Network Analyzer application.

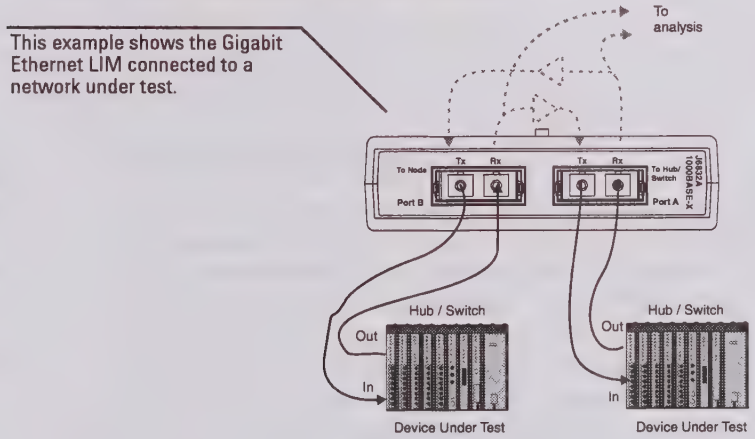
Step 2. Connect the LIM(s) to the Network Under Test

Depending on the LIM(s) you are using, you will connect the LIM to the network under test in multiple ways.

- LAN LIMs connect in monitor or node mode – half-duplex or full-duplex
- WAN and ATM LIMs connect in these Run and Receiver modes – Terminated, Bridged, Monitor Jack, Thru/Drop & Insert

One example is shown here.

J6832A Gigabit Ethernet LIM in Pass-Thru Connection



Use a Crossover Cable to Monitor Between Switches

If you plan to monitor the network between two switches, use the same crossover cable you would normally use to connect the two switches together to make a single connection to the Network Analyzer. Then use a straight-through cable for the other connection. For proper operation, the combined cable length must not exceed 100 meters (328 feet).

The Network Analyzer online Help topic about connecting the Network Analyzer to a network shows how to connect the LIMs to the networks under test. For details about the LIMs, see the *Line Interface Modules Installation Guide*.

For Making Other Connections

If you are connecting to a Distributed Network Analyzer, see the *Distributed Network Analyzer Hardware Setup Guide.*

If you are connecting and setting up the Network Analyzer to be used in Network Analyzer Software client-and-server mode, see the *Network Analyzer Getting Started Guide.*

The Agilent J6800A Network Analyzer contains two data acquisition systems (one for each line interface module) and two slots for the Line Interface Modules (LIMs). The Analyzer is capable of connecting to a wide range of LAN, WAN, and ATM networks, and can analyze the protocols used on those networks.

The supported Line Interface Modules (LIMs) for connecting the Analyzer to the network under test include:

Line Interface Module (LIM)	For LAN	For WAN	For ATM
J6811A — STM-1o/OC-3 — with Opt-SC connectors		WAN	ATM
J6812A — STM-1e/EC-3 — with BNC connectors		WAN	ATM
J6813A/B — E3/T3 (DS3) — with BNC connectors		WAN	ATM
J6815A/B — T1/E1 — with Bantam, RJ-45/RJ-48C connectors		WAN	ATM
J6816A/B — E1/T1 — with DB-9, RJ-45/RJ-48C connectors		WAN	ATM
J6817A/B — E1 — with BNC connectors		WAN	ATM
J6818A — ATM25 — with RJ-45 connectors			ATM
J6820A — High-Speed V-Series (37-pin connector)		WAN	
J6830A — 10Base-T, 10/100Base-TX Ethernet	LAN		
J6831A — 10/100Base-FX Ethernet (fiber interface)	LAN		
J6832A — 1000Base-X (Gigabit) Ethernet	LAN		

The LIMs support hot-swapping, which means that you can remove one LIM and insert another while power is applied to the Network Analyzer. Refer to the *Line Interface Modules Installation Guide* for details and sample connections.

NOTE Hot-swapping a LIM when running Network Troubleshooting Center SNMP/RMON2 data collection can mean that you will have to restart the NTC application once the new LIM has been discovered. This depends on:

- Whether or not the new LIM supports SNMP/RMON2 data collection.
- Whether or not you have the NTC four-interface product.
- Whether or not the LIM is already collecting other data.

Use the Cooling Control Modules

Two Cooling Control Modules (CCMs) are shipped with the Network Analyzer. CCMs are used to maintain the Network Analyzer's internal airflow during operation when one or both of the LIM slots are empty.

Both LIM slots must be occupied with either LIMs or CCMs during operation. Failure to fill both LIM slots can result in faulty operation due to inadequate cooling.

Step 3. Turn On the Network Analyzer

When you turn on the Network Analyzer for the first time, you need to enter information for the Microsoft Windows setup. If you are starting the Network Analyzer Software for the first time, you may be prompted to update the Network Analyzer Software, which is described in the next step.

1 Connect the AC power cable to the Network Analyzer. Turn the power switch on.

The Network Analyzer automatically determines whether the power connection is 100 to 120 volts, or 200 to 240 volts.

CAUTION Agilent Technologies ships the Network Analyzer with a three-conductor power cable that grounds the instrument when it is connected to an appropriate power outlet. Do not operate the Network Analyzer without ground protection.

2 If the Network Analyzer will not start, do the following:

- Ensure that the power cable connections are secure.
- Determine that AC power is available at the outlet.

- Verify that the fuse is intact and operational.

You can pry the power cover open to check the fuse.

3 When the Analyzer starts, follow the instructions that appear on the screen, and accept the Microsoft Windows license agreement.

4 Enter the Microsoft Windows authenticity product ID# that is affixed to the Network Analyzer when you are prompted.

The Network Analyzer Software and Microsoft Windows are installed on the Network Analyzer before it is shipped from the factory. When the Network Analyzer starts, the Windows interface appears.

NOTE

Do not install or try to use a USB mouse the very first time you start the Network Analyzer. Use the touchpad to accomplish operating system setup. You can install and use a USB mouse after the reboot of the Network Analyzer.

Set the Date and Time

1 When the Date/Time Properties dialog box appears, enter the date and time.

2 Set the Network Analyzer's date and time before using it to run measurements.

The Network Analyzer uses the date and time when running applications, generating reports, and updating the system configuration files. The Network Analyzer maintains the date and time when it is powered off.

NOTE

The Network Analyzer operating system Time Zone is set to Greenwich Mean Time (GMT) at the factory. Communication network hardware time is typically set to GMT, which is the same worldwide. Changing the Time Zone setting of the Network Analyzer operating system will affect the timestamps of captured data.

Using the GMT time zone setting is particularly important in centralized network troubleshooting cases where you are capturing data from a geographically dispersed network. In these cases, setting the time zone to GMT for each of the data collection devices allows you to synchronize and easily analyze the correlated data.

If you are using NTC, setting the time zones to GMT for all Network Analyzer agents helps to ensure that the data in the NTC Console is synchronized with the NTC Server. Also, regardless of the time zone in which a particular Network Analyzer agent resides, the time zones are based on a common standard time.

When You Log In to the Network Analyzer for the First Time

When you log in to the Network Analyzer the first time, Windows XP will detect the internal Intel PCI adapter and start the Finding New Hardware operation. It may take 1 to 2 minutes for the Found New Hardware Wizard to display. When the Wizard dialog is displayed, select Next to continue the operation. When the driver has been installed, select Finish to complete the operation.

You must reboot the system so that the adapter is configured correctly.

Shut Down and Cycle Power

1. After the Windows setup is complete, shut down the Network Analyzer using the Windows shutdown sequence. The shutdown and restart sequence updates setup files and prepares the Network Analyzer for running measurements.
2. Wait several seconds, then start the Network Analyzer. View the status LEDs.
3. The status LEDs on the LIM panel show the status of activity in the Distributed Network Analyzer. The status LEDs include Power, Health, and Signal In, and are described in the table below.

Power	**Description**
Green	Power is applied to the Analyzer.
Health	**Description**
Green	Power is applied to the LIM.
Yellow	The LIM is not functioning properly.
Gray (off)	The Analyzer does not detect a LIM.
Signal In	**Description**
Green	The Analyzer has detected good data.
Yellow	Bad data or loss of data is occurring. The type of loss depends on the LIM type. See the *Line Interface Modules Installation Guide*.
Gray (off)	The Analyzer does not detect a LIM. A Network Analyzer Software application is not selected or running.

NOTE In some cases, such as if you are using the Network Analyzer as a PC client to control a Distributed Network Analyzer, you may need to follow the start sequence described in the *Distributed Network Analyzer Hardware Setup Guide*.

Step 4. Update the Software (if necessary)

The Network Analyzer Software was loaded on the Network Analyzer at the factory before it was shipped to you. Agilent strongly encourages you to check periodically for updates, including the first time you use the software.

Software updates are often available through the Agilent Web site. However, you cannot update the Network Analyzer Software from a previous version to the NTC/NA version using the Software Update Web Wizard. Instead, you must order the Software Update Subscription (SUS). Contact Agilent Product Support for details.

Using the Software Update Wizard

The preferred method for updating the software between major releases is by downloading it from the Agilent Web site.

To update the Network Analyzer Software from the Web site:

1. Connect the Network Analyzer to an IP network so that you can access the Internet.
2. Click the Software Update selection in the Agilent Network Analyzer Start menu.
3. Follow the on-screen directions to complete the software update.

Updating the Network Analyzer Software from a CD

1. Insert the Network Analyzer CD in the CD-ROM drive.
2. From the Start menu, select Run.
3. Type D:\install.exe (use the correct letter for the CD-ROM drive) and select OK.
4. Follow the on-screen directions to complete the software update.

NOTE

Windows NT 4.0 SP5 (or higher) users and Windows 2000 users must have Administrator privileges to perform the software update.

For further details about re-installing the software from the CD that was shipped with the Network Analyzer, see the *Network Troubleshooting Center / Network Analyzer Software Setup Guide*.

If you cannot update the software from the Web, or if the update you are looking for is not on the Web, contact Agilent Product Support using the contact information shown in the front of this manual.

NOTE When using the Software Update Web Wizard, the software installation can take up to 20 minutes to run if you choose to perform the Network Analyzer file synchronization.

If You Need to Update the Hardware

To upgrade a J6800A Network Analyzer contact Agilent Product Support.

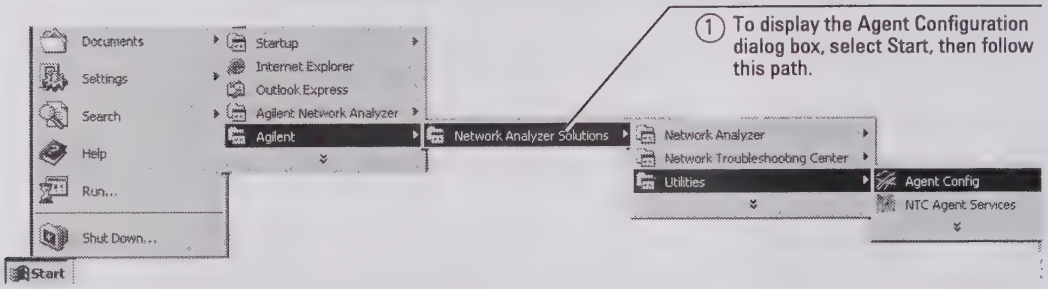
Step 5. Configure IP Addresses (when required)

If you want to access remote data acquisition systems, one of the first things you will need to do is to update their IP addresses. This section describes how to start and use the Agent Configuration Tool to update the IP addresses of the Network Analyzer and/or remote data acquisition systems.

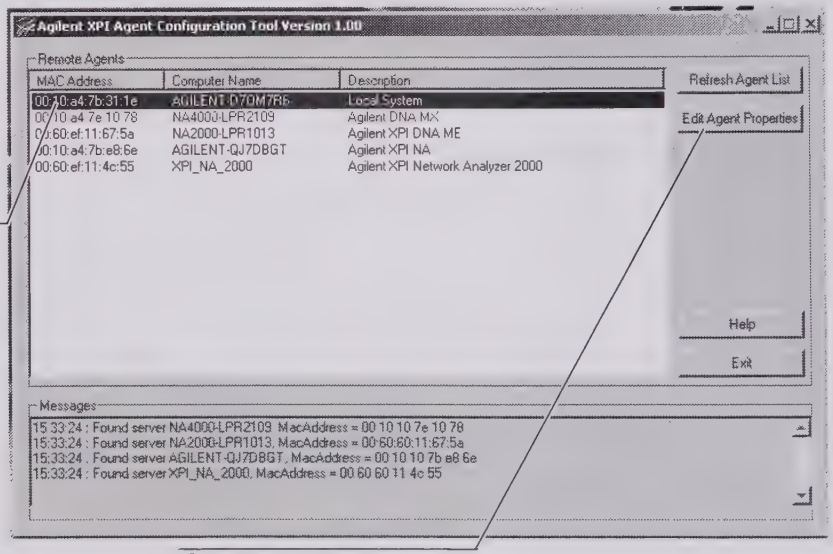
NOTE

If you are using the J6800A Network Analyzer as a PC client to control a Distributed Network Analyzer, for proper control the IP address for the Network Analyzer must be in the same subnet as the Distributed Network Analyzer's IP address. See the *Distributed Network Analyzer Hardware Setup Guide* for more information.

See detailed instructions on the three following pages.

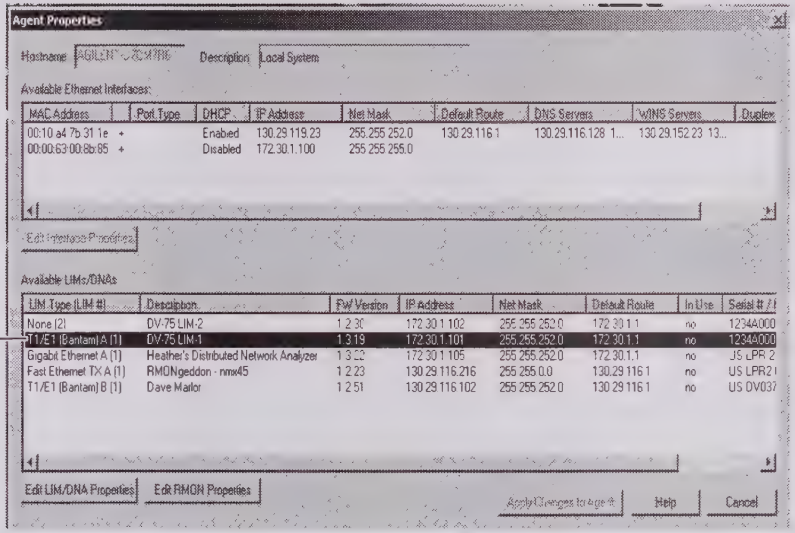


1 To display the Agent Configuration dialog box, select Start, then follow this path.

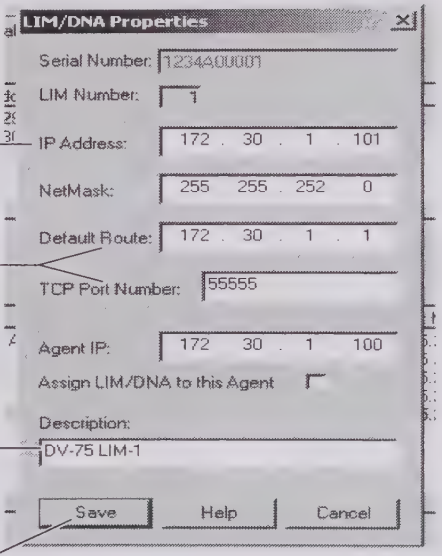


2 Select the Analyzer LIM or device.

3 Select Edit Agent properties. (Or, you can right-click a LIM or device and select Edit Server Properties.)



(4) Select the LIM or device on which you want to change the IP address.


LIM/DNA Properties
Serial Number: 1234A00001
LIM Number: 1
IP Address: 172 . 30 . 1 . 101
NetMask: 255 . 255 . 252 . 0
Default Route: 172 . 30 . 1 . 1
TCP Port Number: 55555
Agent IP: 172 . 30 . 1 . 100
Assign LIM/DNA to this Agent
Description:
DV-75 LIM-1
Save
Help
Cancel

(5) Type in a different IP address.

Changing the Default Route or TCP Port Number resets the Network Analyzer acquisition hardware.

(6) Enter a maximum of 64 characters for the description.

(7) Save the new Lim configuration.

After you Save the new properties, the Agent Properties dialog box returns. Select Apply Changes to Agent to set the new LIM address.

IP Addressing Scheme

The Agilent Network Analyzers use a "Private Internet" subnet scheme for the IP addresses assigned to it. Using the Private Internet IP addressing scheme minimizes the possibility of clashes between Network Analyzers and other devices on a network. This IP addressing scheme applies to the Control & Sync Out port also.

The Network Analyzers use 172.30.1.0 as the subnet by default. This means that IP addresses from 172.30.1.1 through 172.30.1.254 are valid. The Network Analyzers use a portion of the address range of 172.16.0.0 to 172.31.255.255 by default.

- The subnet mask is 255.255.255.0.
- The default router for the internal network interface card is 172.30.1.100.
- The default IP addresses are: 172.30.1.101 for the first data acquisition system (LIM 1), and 172.30.1.102 for the second data acquisition system (LIM 2).

Validating the TCP/IP Configuration

To validate the TCP/IP configuration, ping either one or both of the IP addresses for the data acquisition systems. To ping a data acquisition system:

1. Open a DOS window.
2. Enter: ping xx.xx.xx.xx (using the IP address of interest). The DOS command will report the connectivity status or errors.

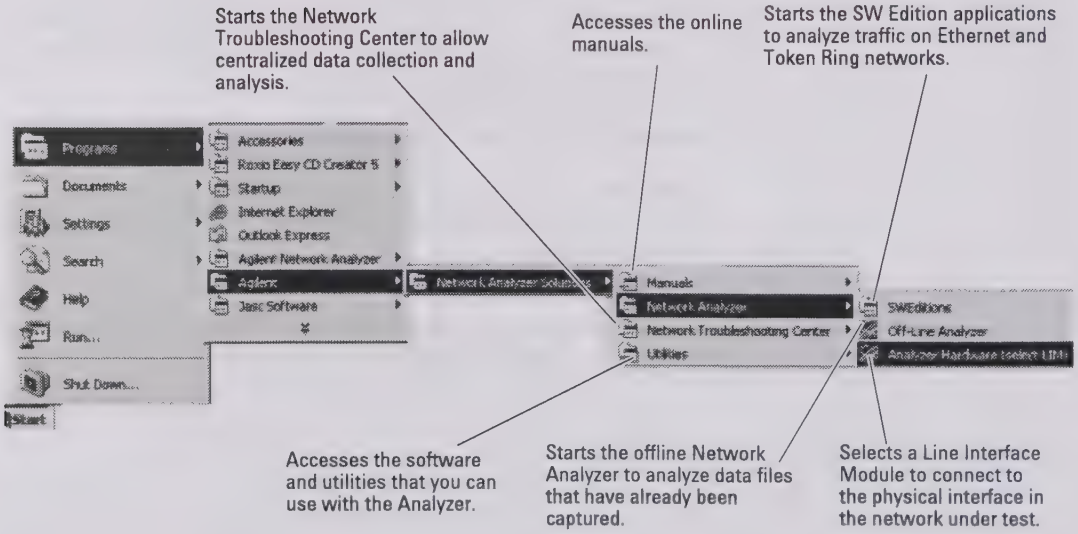
Step 6. Start the Software

Starting the Network Analyzer Software

When starting the Network Analyzer Software, you can select from multiple applications, depending on what you need to do. These Network Analyzer applications allow you to:

- Actively test a network using the Network Analyzer's dedicated hardware analysis with the Line Interface Modules (LIMs)
- Analyze pre-captured data files offline
- Analyze Ethernet and Token Ring networks using the SW Edition

The Network Analyzer applications are summarized here:



If you are selecting a LIM If you are selecting a LIM for dedicated hardware analysis, see the next step.

If you are selecting another application If you are selecting a SW Edition or the Offline Analyzer, see the *Network Analyzer Getting Started Guide* for details.

If you are selecting the Network Troubleshooting Center, see the *Network Troubleshooting Center Getting Started Guide.*

NTC Agent Services Tool

You may need to configure a J6800A Network Analyzer to be recognized as an "agent" by the Network Troubleshooting Center. The NTC Agent Services tool enables you to configure a J6800A Network Analyzer to be an RMON agent to be used for SNMP/RMON2 data collection and communication between NTC and the agent's application.

Starting the Network Analyzer Software from the Network Troubleshooting Center Console

When used with the Network Troubleshooting Center Console, Network Analyzers can be used to collect either RMON data or Network Analyzer detailed network protocol data. NTC recognizes the Agilent agents when they are running in either RMON or Network Analyzer mode.

To collect RMON data using a J6800A Network Analyzer, you switch the device to RMON mode manually.

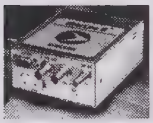
When using a remote session window from NTC to start the Network Analyzer's native application, the Network Analyzer switches from RMON mode to Network Analyzer mode.

You can start the Network Analyzer Software from NTC in the ways described here:

- From the "agent level" – You can choose to start a remote session. You are presented with a remote session window in which you use the Start menu to start the Network Analyzer application.
- From the "interface level" – You can choose to start a remote session. In this case, because NTC recognizes which LIM the Network Analyzer is using, the remote session window opens and the Network Analyzer application is started.

Refer to the *Network Troubleshooting Center Getting Started Guide* for more information.

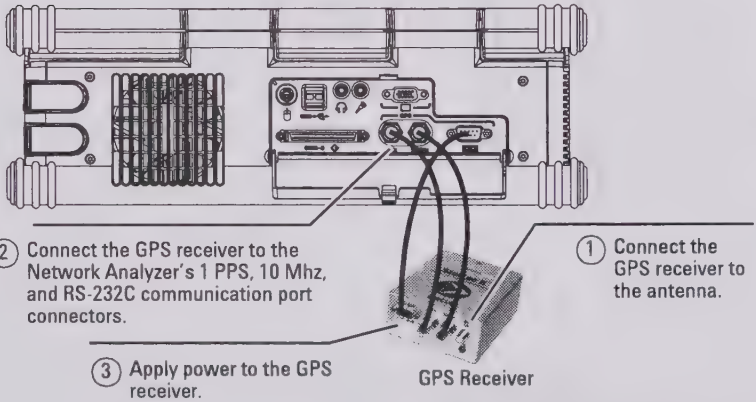
Connect to a GPS Receiver (when required)



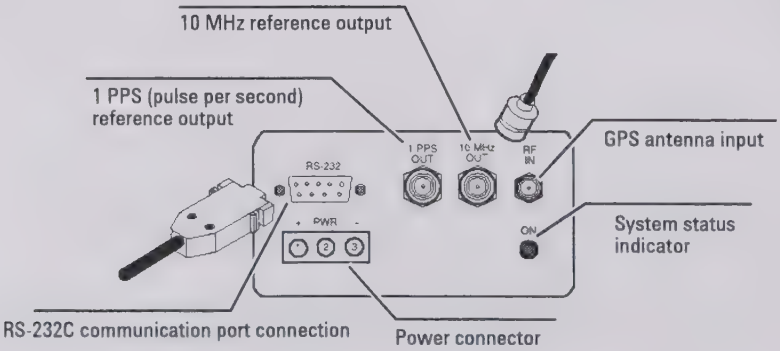
The Network Analyzer provides the clock source for the data timestamp and correlation. Time synchronization of the two internal data acquisition systems is performed using the internal, real-time clock of the first data acquisition system (Module 1) in the Network Analyzer as the reference clock source, or by using a Global Positioning System (GPS) clock for the reference clock source.

Multiple GPS receivers are supported. See Time Sync in the Network Analyzer Help for more information.

This picture shows the Datum STARLOC II connected to the Network Analyzer. If you are connecting one of the other supported GPS receivers, see the manufacturer's instructions.


2 Connect the GPS receiver to the Network Analyzer's 1 PPS, 10 Mhz, and RS-232C communication port connectors.
1 Connect the GPS receiver to the antenna.
3 Apply power to the GPS receiver.
GPS Receiver

Datum STARLOC II Connections



Configure the GPS Clock Source (when required)

CAUTION

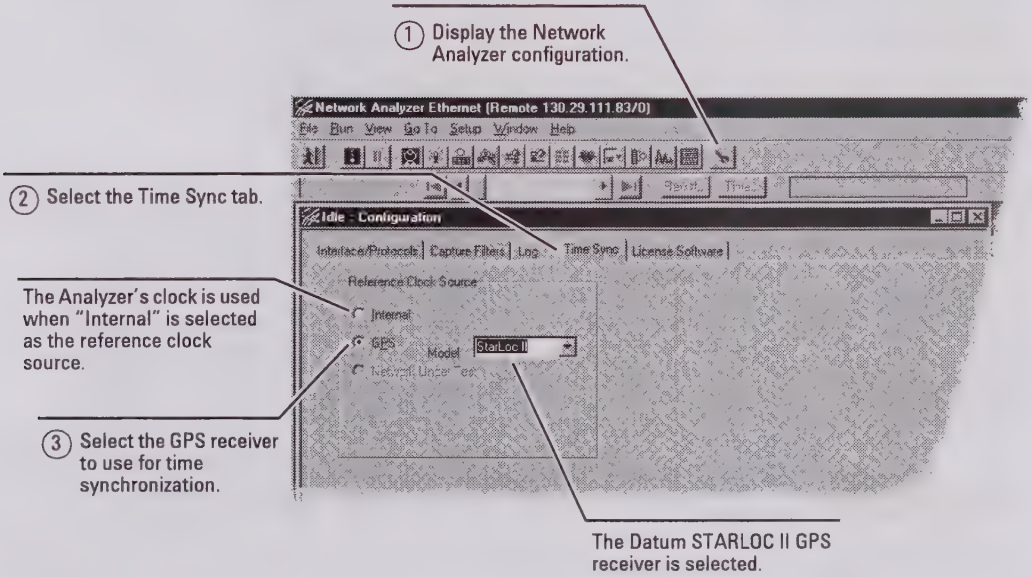
Allow the GPS to Synchronize Before Selecting It

Select the GPS clock only after you have performed these steps:

1. Connect the antenna to the GPS receiver.
2. Power up the GPS.
3. Allow sufficient time for the GPS receiver to synchronize.

See the manufacturer's GPS operating manual for details.

After you start the Network Analyzer application, configure the GPS clock source in the Time Sync tab in the Network Analyzer configuration dialog box.

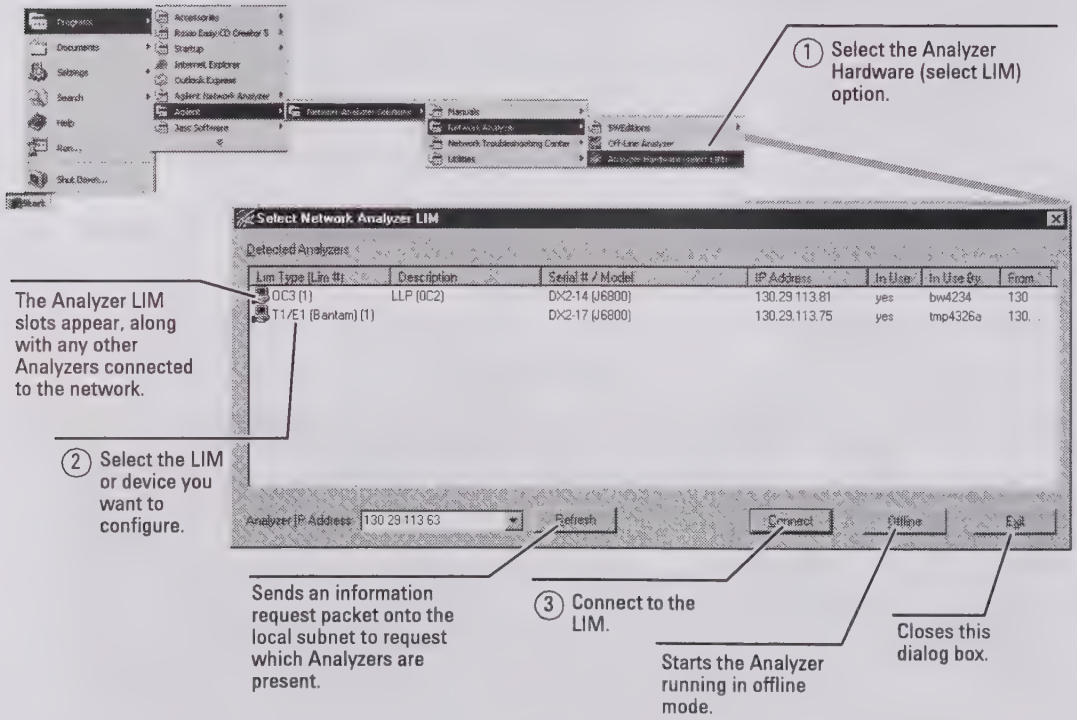

1 Display the Network Analyzer configuration.
Network Analyzer Ethernet (Remote 130.29.111.83/0)
File Run View Go To Setup Window Help
2 Select the Time Sync tab.
Idle - Configuration
Interface/Protocols Capture Filters Log Time Sync License Software
Reference Clock Source
Internal
GPS
Model
StarLoc II
The Analyzer's clock is used when "Internal" is selected as the reference clock source.
3 Select the GPS receiver to use for time synchronization.
The Datum STARLOC II GPS receiver is selected.

NOTE

When using Datum GPS units under certain conditions of operation, Network Analyzer timestamps can appear to be out of synchronization with the GPS clock. To avoid this situation, ensure that the GPS time is set to Universal Time Coordinated (UTC) before completing the setup.

Step 7. Select the Line Interface Module(s)

To select a Network Analyzer LIM, follow these steps.



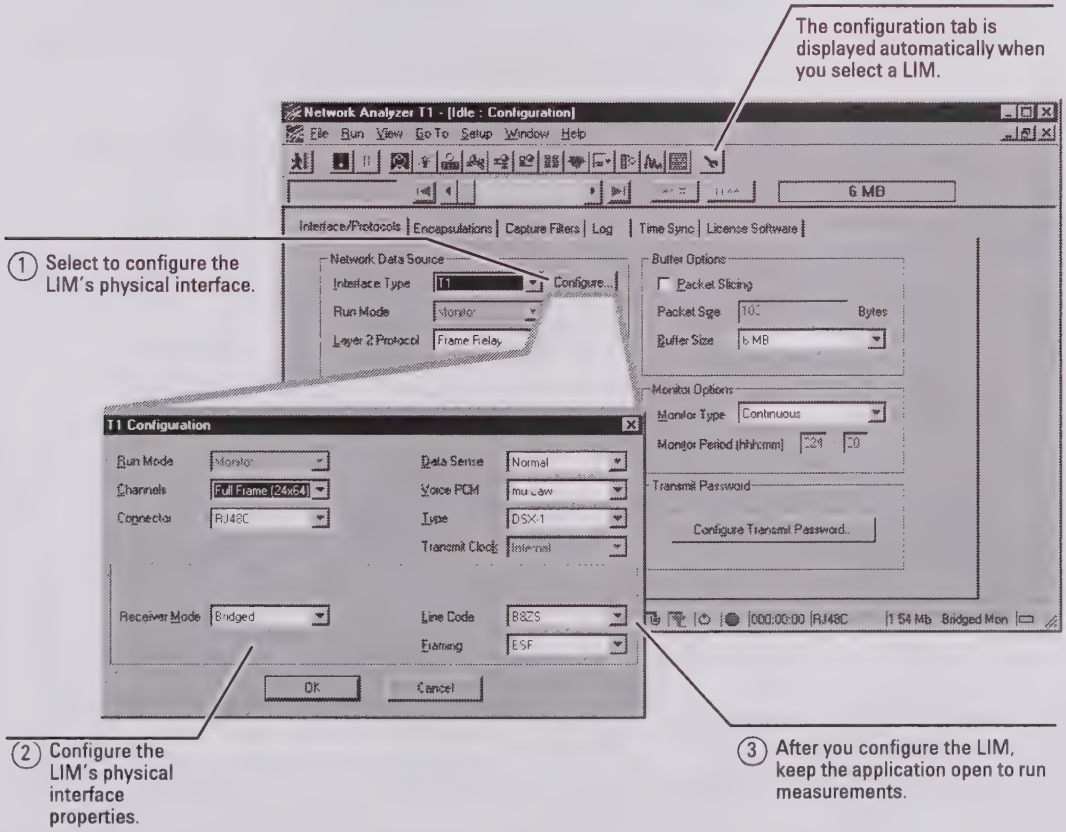
NOTE

You can right-click any LIM to display and configure the server properties.

While using the application, press F1 to display details about this dialog box.

Step 8. Configure the LIM's Physical Interface

Configure the LIM's physical interface to match the LIM's connections to the network under test. When you are finished, keep the application open so that you can run measurements.


The configuration tab is displayed automatically when you select a LIM.
Network Analyzer T1 - [Idle : Configuration]
File Run View Go To Setup Window Help
6 MB
Interface/Protocols | Encapsulations | Capture Filters | Log | Time Sync | License Software
Network Data Source
Interface Type T1
Configure...
Run Mode Monitor
Layer 2 Protocol Frame Relay
Buffer Options
Packet Slicing
Packet Size 100 Bytes
Buffer Size 6 MB
Monitor Options
Monitor Type Continuous
Monitor Period (hh:mm:ss) 224 20
Transmit Password
Configure Transmit Password...
T1 Configuration
Run Mode Monitor
Channels Full Frame (24x64)
Connector RJ48C
Data Sense Normal
Voice PCM mu-Law
Type DSX-1
Transmit Clock Internal
Receiver Mode Bridged
Line Code B8ZS
Framing ESF
OK
Cancel
000:00:00 RJ48C
1.54 Mb Bridged Mon
1 Select to configure the LIM's physical interface.
2 Configure the LIM's physical interface properties.
3 After you configure the LIM, keep the application open to run measurements.

Select and Configure the Second LIM (when required)

1. Start a second Network Analyzer session by clicking the Analyzer Hardware (select LIM) option in the Agilent Network Analyzer Start menu again, and select the second LIM.
2. Configure the second LIM's physical interface.
3. After you finish configuring the second LIM, keep the second application open to run measurements.

Step 9. Run Measurements to Begin Testing

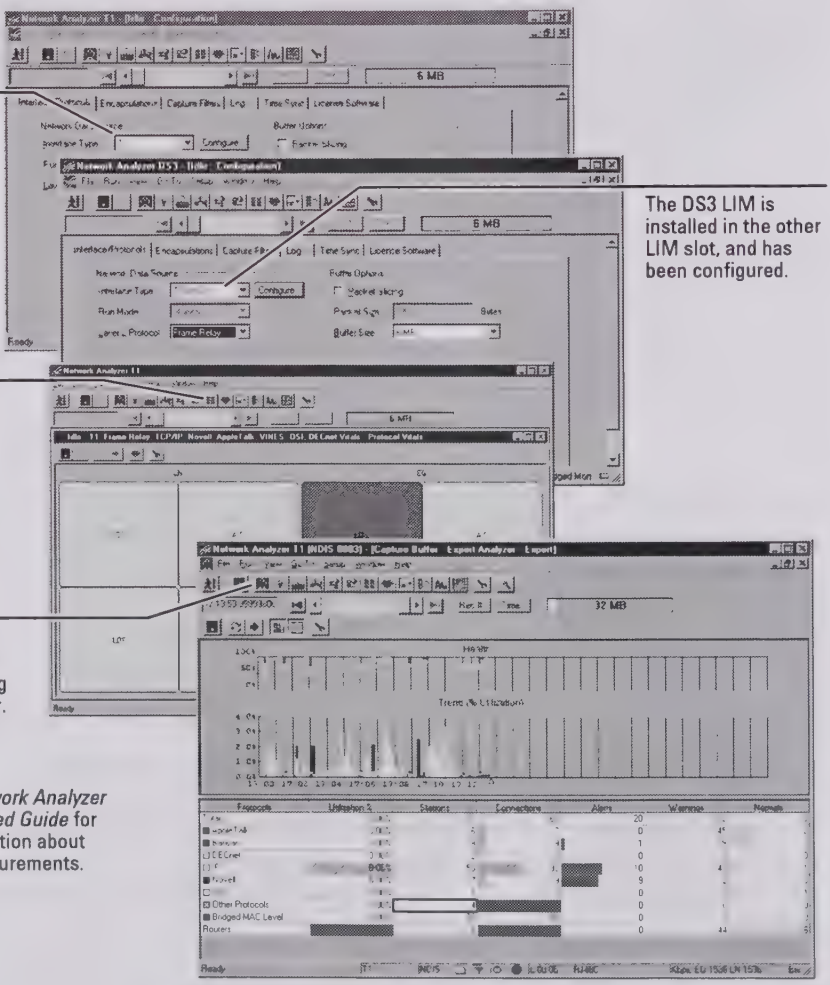
The Network Analyzers provide a complete toolset for gathering data during network monitoring, test, and troubleshooting.

If you monitor, test, or analyze...	Tasks You Can Perform	Measurement to Use
Network health	**Examine the overall health of the network.**	Expert Analyzer
Decoded data	**Use the protocol decodes to interpret traffic on the network and display the captured data.**	Decode View
Events	**View network events.**	Commentators
Utilization	**View network utilization.**	Protocol Statistics
Nodes	**Display the nodes on the network.**	Node Discovery
Communication, Internetworking	**View the communication between nodes.** **View LAN protocols encapsulated in WAN or ATM data.** **View MAC, IP addresses contained inside WAN, ATM addresses.**	Connection Statistics
Traffic patterns	**Display the traffic patterns between nodes.**	Node Statistics
Physical connections	**Show the status of the physical network connections.**	Line Status
Data and trends	**Display cumulative data and trends.**	Protocol Vitals
Ping, Traffic generation...	**Perform active tests on the network.**	Active Tests
Layer 2 activity	**Display LAN, ATM, and WAN layer 2 statistics.**	VLAN Statistics (LAN), VPI.VCI Statistics (ATM), DLCI Statistics (WAN)
Voice quality and MOS	**Assess voice quality on a call-by-call basis and calculate a predictive MOS.**	RTCP Monitor
RTP traffic, VoIP	**Troubleshoot and analyze RTP traffic, and analyze VoIP activity.**	RTP Statistics
Data collection	**Collect data from SNMP-managed devices on a network.**	Switch Advisor

Running Two Network Analyzer Applications

With two LIMs installed, you can start running measurements using both of the LIMs to acquire data from the network under test by starting the Analyzer Hardware (select LIM) twice from

the Agilent Network Analyzer Start menu.This picture shows a Network Analyzer with two LIMs – T1 and DS3. Two applications are running, one for each LIM:


The T1 LIM is installed in one of the LIM slots, and has been configured.
The DS3 LIM is installed in the other LIM slot, and has been configured.
1 Display the Line Status for a LIM to check the physical connections of the LIM.
2 Begin running measurements, for example, by starting the Expert Analyzer.
3 See the Network Analyzer Getting Started Guide for more information about making measurements.

Typically you will select one or more measurements, configure the measurements, then run the measurements.

What's Next? See the *Network Analyzer Getting Started Guide* for details about running measurements and what you see in the software.

Other Network Analyzer Setup Information

Using the CD-RW (Read/Write) Drive

To use the CD-RW drive, insert a CD-RW disk into the drive tray. A Windows Explorer dialog box appears and asks if you want to write to the CD-RW.

Removing and Installing the Hard Disk Drive

If you are using the Network Analyzer in secure facilities, you may need to remove and replace the hard disk drive.

Replace the Network Analyzer disk drive with the Agilent J6750A disk drive only. Other disk drives will not operate with the Network Analyzer.

WARNING

Before removing the hard disk drive, turn off power to the Network Analyzer to eliminate the risk of shorting the hard disk drive to the chassis. Pay close attention to the Warning label on the Network Analyzer.

Also ensure that you are grounded to avoid ESD (Electro Static Discharge), which can damage the Network Analyzer or LIMs, while handling the hard disk drive.

1 Shut off the Network Analyzer and then wait 10 seconds for the disk drive to stop spinning.

2 Locate the hard disk drive cover tab and pull the tab outward to remove the cover.

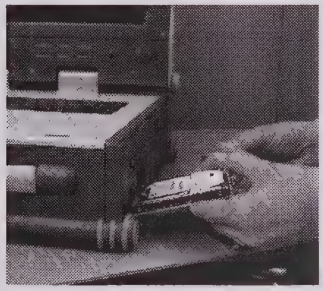
3 Release the disk drive by turning the drive retaining screws one fourth of a turn to the left.

4 Slide the hard disk drive out of the Network Analyzer, leaving approximately 3 inches of slack in the ribbon cable.

5 Push the connector's locking tabs outward, then disconnect the hard disk drive from the ribbon cable.

6 Attach the new hard disk drive to the ribbon cable. Make sure the connector's locking tabs are in the closed position.

7 Slide the new hard disk drive into the Network Analyzer.



8 Secure the hard disk drive in place by turning the drive retaining screws one fourth of a turn to the right.

9 Re-attach the cover.

Network Interface Cards

You can use a NIC card in the Network Analyzer to:

- Connect to the IP network to update the Network Analyzer Software.
- Remotely control another Network Analyzer or Distributed Network Analyzer.
- Allow a PC to remotely connect to the Network Analyzer.

The J6753A Modem/Ethernet 56K is the supported Network Interface Card (NIC) for Network Analyzer products.

For details about how to install a NIC card in the PC client and verify its proper operation, refer to the NIC card manufacturer's instructions. How to configure the IP address of the NIC is described in Chapter 2.

If You Need to Recover the Operating System

If your system fails to boot or is unavailable due to problems that prevent communication from functioning, you can take some actions before calling Technical Support at Agilent Technologies.

Agilent recommends that you power cycle your machine. In many cases, this action will resolve the problem. If your problem persists, you must use the bootable recovery CD that was shipped with your Network Analyzer.

When you use the recovery CD, it erases all data and returns the Network Analyzer to its factory ship state. Additionally, all software upgrades must be redone after your system has been recovered.

Follow these steps to recover the Network Analyzer platform:

1. Ensure that the Network Analyzer is turned off.
2. Insert the bootable recovery CD into your CD-ROM drive.
3. Turn on the power to your machine. The CD will restore all the partitions on your hard drive with the original operating system. When prompted to flash the BIOS, accept to do so. The recovery process takes about 10 minutes.
4. Wait until you hear continuous beeps before removing the CD.
5. Remove the CD and turn off the power.
6. Disconnect all network cables.
7. Turn on the power. You will hear a chime ring on the Network Analyzer to indicate your system has been restored to its original state.

If You Need to Recover the Operating System, continued

NOTE

Do not install or try to use a USB mouse the very first time you start the Network Analyzer. Use the touchpad to accomplish operating system setup. You can install and use a USB mouse after the reboot of the Network Analyzer.

When You Log In to the Network Analyzer for the First Time

When you log in to the Network Analyzer the first time, Windows XP will detect the internal Intel PCI adapter and start the Finding New Hardware operation. It may take 1 to 2 minutes for the Found New Hardware Wizard to display. When the Wizard dialog is displayed, select Next to continue the operation. When the driver has been installed, select Finish to complete the operation.

You must reboot the system so that the adapter is configured correctly.

In the event your system still fails to boot, contact Technical Support at Agilent Technologies by calling 1-800-452-4844 or send a fax to 303-754-4802.

Where to Find More Information

Hardware Setup Guide	Use this manual to install, connect, set up, and configure the Network Analyzer hardware.
Getting Started Guide	Use the *Network Analyzer Getting Started Guide* to learn how to use the Network Analyzer measurements to perform protocol analysis.
Help	Use the online Help in the Network Analyzer application for detailed information about making measurements with the Network Analyzers.
Steps to Use	Refer to Chapter 2 of this manual to set up and begin using the Network Analyzer.
Product Support	For other assistance, see the Product Support number at the front of this manual.

A
J6800A Specifications and Regulatory Compliance

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J6800A Physical Specifications

Size	402 x 356 x 142 mm (15.8 x 14 x 5.6 inches)
Weight	9 kg (20 lb)

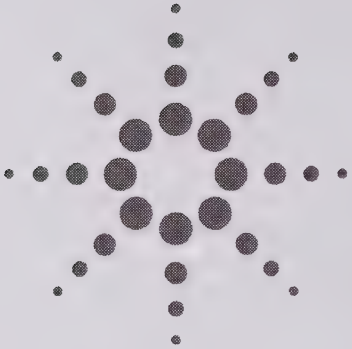
J6800A Operating Conditions

Temperature	Operating	+5°C to +40°C (+41°F to +104°F)
	Non-operating	-25°C to +60°C (-13°F to +140°F)
Humidity	Operating	20% to 80% rh, non-condensing
	Storage	10% to 90% rh, non-condensing
Altitude	Operating	4,575 meters (15,000 feet)
	Storage	12,200 meters (40,000 feet)
Power Requirements	External	100 to 240 V~, 50-60 Hz, 2.5A

Regulatory Compliances

Electromagnetic Compatibility	IEC 61326-1
	European Low-Voltage and EMC Directives (marked)
	AS/NZS 2064.1 (marked)
	ICES/NMB-001 (marked)
Safety	IEC 61010-1
	CSA C22.2 No. 1010.1 (marked)
	UL 3111 (marked)

The term "marked" indicates that the product bears the appropriate compliance markings.



B
Essentials of SNMP, RMON, and RMON2

Managing Networks Using RMON Data 66
Using NTC to Monitor RMON Data Collection 69
Allocating Memory for the RMON Table 73

Managing Networks Using RMON Data

This appendix provides a basic level of information about RMON data collection on the Network Analyzer products. The Network Troubleshooting Center (NTC) 1.0 release with the Network Analyzer Software 2.0 release support Remote Monitoring (RMON) data collecting in conjunction with SNMPv1.

SNMP Version 1 (SNMPv1) is the current standard version of the SNMP protocol, which is an IETF standard defined in RFC 1157. RMON is an extension to the basic SNMP standard that provides the ability to manage LANs as well as devices attached to those networks.

RMON Version 1 (RMON) is defined in RFC 2819; and its enhanced version, RMON Version 2 (RMON/2), is defined in RFC 2021. Another standard, MIB-II, provides general TCP/IP management information.

These specifications that define SNMP, RMON, and MIB-II can be found at the Internet Engineering Task Force located at www.ietf.org.

Overview of SNMP, MIB-II, and RMON

The SNMP protocol is an application-layer protocol standard for managing TCP/IP based networks. SNMP provides a set of operations that allows devices on your network to be managed remotely. The SNMP protocol allows you to monitor your network constantly. It examines packets coming through your network and notifies you if a potential problem exists.

The SNMP protocol is also considered a network management system that contains management stations and SNMP-capable devices. A network management station is a PC or workstation running a software system that can handle management tasks for a network. Network Management Stations are commonly referred to as NMSs. An NMS polls and receives SNMP data traps from agents in a network.

A poll involves the act of querying an agent for some piece of information. The agent is a piece of software that runs on the network devices you are managing. When the agent notices that something is causing a problem on your network, it can send a trap to the NMS. A trap is the way an agent informs the NMS that an event has occurred. A trap is an asynchronous notification sent from an SNMP agent to a network management station. A trap represents a collection of data defined by a managed object.

SNMP sends and receives information by using the User Datagram Protocol (UDP), which is defined in RFC 768. This means that no end-to-end connection is made between the agent and the NMS when datagrams (packets) are sent back and forth. UDP runs over the IP layer to deliver the packet. UDP allows the NMS and agent to communicate with one another. The IP layer delivers the SNMP packet to its destination, where it is handed off to the physical network.

Each SNMP packet contains a community string for security purposes. The community string in the SNMP statement must be the same as the one in the SNMP agent so communication between the NMS and agent can occur.

A brief overview about Management Information Base objects follows before discussing the SNMP/RMON2 data collection that NTC manages on the Agilent Network Analyzer products.

Management Information Base (MIB)

The Management Information Base (MIB) is a database of managed objects that an agent tracks and is accessed by the NMS. A MIB contains a definition of the managed object and explains its meaning. In other words, the objects in the MIB are used as object identifiers, which means a textual string is used as a descriptor.

The particular MIB standard that is implemented by all SNMP agents is MIB-II. MIB-II provides general TCP/IP management information.

The implementation of RMON data collections for this software release includes RMON MIBs, MIB-II, and Agilent private MIBs. The Agilent private MIBs are not included in this Appendix.

RMON MIB

Remote Monitoring (RMON) is a standard monitoring specification that enables various network monitors and console systems to exchange network-monitoring data.

RMON is a supplement to the MIB-II group. RMON delivers information in nine RMON groups of monitoring elements, each providing a specific set of data to meet common network requirements. RMON provides the NMS with MAC-level statistics.

RMON/2 adds an additional capability by providing network and application-level statistics. RMON/2 delivers information in nine RMON groups of monitoring elements.

See RFC 2021 and RFC2074, *Remote Network Monitoring Management Information Base Version 2*, for more information. See RFC1213, *Management Information Base for Network Management of TCP/IP-based internets: MIB-II*, for more information about these groups.

Using NTC to Monitor RMON Data Collection

SNMP, RMON, and RMON2 (SNMP/RMON2) are remote networking monitoring standards that enable various network monitors and console systems to exchange networking monitoring data. The implementation of SNMP/RMON2 capability for the Network Analyzer devices is available when a 10/100/1000 Ethernet LIM is installed in the following Agilent Network Analyzer products:

- J6800A Network Analyzer
- J6801A Distributed Network Analyzer
- J6802A Distributed Network Analyzer MX

The 10/100 NDIS NIC interfaces on the J6805A Distributed Network Analyzer ME have SNMP/RMON2 capability enabled.

As part of the Network Analyzer Solutions, NTC is used to monitor SNMP/RMON2 data collection on the Network Analyzer products. The RMON agent software that resides on the Network Analyzers is responsible for the collection of SNMP/RMON2 data.

RMON and MIB-II Supported Groups

Agilent supports specific groups in the RMON, RMON/2, and MIB-II protocols. NTC utilizes a subset of this information as listed below:

- Agilent supports four of the nine groups of the RMON MIB: Ethernet Statistics, Alarm, History, and Event.
- Agilent supports all nine groups for the RMON/2 MIB.
- NTC uses the data from four of the RMON/2 MIB groups: Protocol Directory, Network Layer Host, Application Layer Host, and Probe Configuration.
- Agilent supports three of the nine groups in MIB-II: System, Interfaces, and SNMP.

Accessing RMON Data through NTC

NTC coordinates the data collection methods for the SNMP/RMON2 measurements. The default startup mode on the DNA MX and DNA ME is SNMP/RMON2 mode. For the J6800A Network Analyzer and PC agent connected to a J6801A, you must start the agent services manually by using the NTC Agent Services.

The RMON agent gathers statistical information from a subset of these RMONv2 and MIB-II groups and reports the data collection to NTC. NTC monitors the status of a Network Analyzer from the RMON data collection.

The RMON agent notifies NTC through standard traps. A trap is a collection of data that is defined by a particular MIB. A few of the trap formats and contents are described next.

- ColdStart – The RMON agent has performed a cold start and factory defaults have been restored.
- WarmStart – The RMON agent has performed a warm start, all control tables are still persistent, and data tables are cleared.
- LinkDown – An interface has gone down due to the link being disconnected.
- LinkUp – An interface has become active due to a link being restored.

Other proprietary traps exist for interface status. Contact Agilent Technical Support for more information.

The LinkDown and LinkUp traps are particularly important in understanding how NTC monitors the Network Analyzer and SNMP/RMON2 applications that run on the Network Analyzer devices. This scenario, described next, occurs when a user wants to start the Network Analyzer application on a Network Analyzer device while the SNMP/RMON2 application is running.

NTC communicates to the Network Analyzer device about switching the application from SNMP/RMON2 mode to the Network Analyzer mode. The Network Analyzer stops the

SNMP/RMON2 data collection on its acquisition systems and moves the interface to status down, while it is troubleshooting in Network Analyzer mode.

When the user exits from the Network Analyzer application, NTC communicates to the Network Analyzer device to stop the application. The device stops the Network Analyzer data collection and moves the interface to status up to start the SNMP/RMON2 data collection again.

For the Distributed Network Analyzer MX upon exiting the Network Analyzer application, the acquisition system reboots, which means a ColdStart Trap is sent when the interface changes. For the Distributed Network Analyzer ME, a WarmStart Trap is sent to indicate the DNA ME is back in SNMP/RMON2 mode. For the J6800A Network Analyzer and PC agent, you must manually reset the device to SNMP/RMON2 mode.

Accessing RMON Data by Non-NTC Systems

The SNMP protocol utilizes community strings to establish trust between managers and agents. Non-NTC systems, like HP OpenView and others, are allowed to access the SNMP/RMON2 data information gathered on the Agilent Network Analyzers.

These non-NTC systems are considered third-party applications or NMSs that may need to gather statistics from Agilent devices.

The SNMP/RMON2 agent in the J6800A Network Analyzer, J6801A Distributed Network Analyzer, J6802A Distributed Network Analyzer MX, and the J6805A Distributed Network Analyzer ME support the following community strings and access levels as described in the next table:

Community String	Level
Public	1
RMON	2
RMON_admin	3
agilent_admin	4
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Allocating Memory for the RMON Table

The memory allocated for all RMON tables is 64 MBytes of system RAM. Here is a list of the table groups that are configured on the RMON agent probe and their maximum sizes.

Table Name	Maximum Entries
Host Table Size	180000
Maximum Number of RMON MIB TopN Studies	Unlimited
Maximum Entries per TopN Studies	220000
Maximum Traffic Matrix Table Size	250000
Maximum Number of RMON MIB History Studies	Unlimited
Total Number of History Buckets	750000
Network Layer Host Table Size	220000
Network Layer Traffice Matrix Table Size	180000
Application Layer Host Table Size	220000
Application Layer Traffic Matrix Table Size	180000
Maximum Entries Per RMON2 TopN Study	120000
Maximum Entries Per RMON2 Address Map	780000
Maximum Number of Alarms	50000
Maximum Number of Events	120000
Log Table Entries	380000
Maximum Number of Filters	N/A
Maximum Number of Channels	N/A
Maximum Number of Capture Buffers	N/A
Trace Buffer Packet Capacity	N/A
Trace Buffer Octet Capacity	N/A

Maximum Number of Community Names in Com Access Table	Unlimited
Maximum Number of Trap Destinations	Unlimited
Maximum SLIP Connection Entries	N/A
MaximumSingle Shot Pings	N/A
Maximum List Pings	N/A

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